

Camelina oilseeds and biodiesel

On-farm whole cycle operation

Ken DeBoerer

Overview

- Ken Deboer
- Rancher from Ryegagte
- Novice farmer
- (novice everything)

- Received \$2600 grant from NCAT to evaluate real on-farm feasibility of growing, crushing and making biodiesel from camelina
- Also to evaluate camelina meal as cattle cake

- Prepared two 2 ½ acre fields; one poor, the other very poor
- Field 1 was more or less virgin scraggly sage rangeland
- Field 2 was an unused low-lying old irrigation runoff area full of weeds and a bit spongy and saline in spots.
- Planted camelina @ 4lb/acre on Feb 17, 2007
- Didn't spray or fertilize





- Bought 1 ton Chinese oilseed press (crusher)
- Very bad idea, as will be seen
- 1 ton crusher turned out virtually useless
- Camelina fields began growth early and matured fairly well in both fields
- Combined crops on July 17; seed turned out quite dirty with many residual husks



RESULTS

- Yield from both fields about same; poor
- Got only 35 bushels total seed
- Weight per bushel was about 50-55 lb
- Total yield therefore, 7 bu/acre, was 350 lb/acre
- However, only spent \$5/acre for seed and about another \$20/acre for preparation, seeding and combining

CRUSHING

- Tried to start crushing on 3 Aug.
- Finally, by Aug 21 got the system working enough to get about $\frac{1}{2}$ gal oil from about 20 lb seed, along with about 12 lb meal.

By Sept got to processing about 1 bu per hour under the best of circumstances



- Oct 4 crushed 2 bu and got ~3 gal good oil and nearly 2 bu ,in volume, of good meal
- To date have only gotten ~14 gal oil and 10 bu (about 400 lb) meal from crushing about 10 bu. seed, which weighed 500 lbs
- This equates to about 22% efficiency in oil extraction
- Oil dirty & required extensive settling & filtering



- Made 1 liter test batch of biodiesel, good result. Expect making biodiesel will be quite easy with camelina oil.
- Fed 10 cows the meal, again with good results. Very palatable and cows doing well after about 10 days feeding 1-2 lb/day. Tests for oil and protein content pending.
- Anticipate meal will be a very valuable commodity

CONCLUSIONS

- Test for camelina crop was a severe one, i.e. on poor ground, no attention paid to crop after planting.
- Yield was low, 350lb/acre due to: poor soil, no fertilizer, no spray, excess weediness.
- Will try re -cropping next year without fertilizer but with weed control.
- Expect that with more, but still low, inputs, raising camelina will be quite feasible

CONCLUSIONS, (cont.)

- Seed stores well in bins
- Cake will make excellent livestock feed. No bad effects noted on limited trial even though one cow once ate about 8 lbs herself.
- Oil will probably be good biodiesel feedstock at fairly low cost
- Crushing was my main problem. Mostly due to totally inadequate size machine. A 1 ton crusher is way too slow for even a single farm use. Strongly recommend if a single farmer wants to crush, at least a 3 ton machine.
- Also, a filter press will be required, as settling and filtering the oil was a major, time-consuming effort.